

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch

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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-000687**Date Inspected:** 18-Oct-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China

CWI Name:	Zhang Xu Liang & Fu Yu Hong			CWI Present:	Yes	No	
Inspected CWI report:	Yes	No	N/A	Rod Oven in Use:	Yes	No	N/A
Electrode to specification:	Yes	No	N/A	Weld Procedures Followed:	Yes	No	N/A
Qualified Welders:	Yes	No	N/A	Verified Joint Fit-up:	Yes	No	N/A
Approved Drawings:	Yes	No	N/A	Approved WPS:	Yes	No	N/A
				Delayed / Cancelled:	Yes	No	N/A

Bridge No: 34-0006**Component:** OBG U-Rib Trial Assy**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector, Mike Hasler was present to observe the fitup, welding and related activities associated with the fabricating of Caltrans Mock-up, 77M, 89M, 114M and U-Rib Trial Assembly, for the San Francisco Oakland Bay Self Anchored Suspension Bridge, at Zhenhua Port Machinery Company (ZPMC) facility on Changxing Island.

Item	Description	WBS	Dwg No.	Status
1	U-Rib Trial Assy	NA	NA	Welding in Progress

OBG U-Rib Trial Assembly: Caltrans QA Inspector witnessed ZPMC perform the u-rib trial welding of 5 u-ribs to deck plate subassembly. ZPMC elected to weld three u-ribs simultaneously first and then the remaining two u-ribs. The welding consisted of welding the u-rib partial joint penetration (PJP) bevel weld joint, joining the u-ribs to the deck plate. The u-ribs were tack welded at required locations and blended for the purpose of improving the weld interface between the root weld pass and the tack weld. ZPMC then welded the root weld pass with the gas metal arc welding (GMAW) process and, filled/capped with the submerged arc welding (SAW) process.

The welding of the root weld pass was observed by Caltrans QA Inspector. The 10 meter long u-rib assembly was mounted on a welding table. Camber was applied to the assembly and then clamped in position to prevent distortion during the welding of the u-rib assembly. The welding was performed using multi welding heads mounted and supported on a gantry fixture. The GMAW welding procedure specification is identified as WPS-B-T-2342-U1 (U-Rib). The GMAW welder operators were identified as Mr. Zhang Sho Hui, Mr. Tang Liang, Mr. Fun Chun Hong, Mr. Jiang Tin Guang, Mr. Yu Guo Yin and Mr. Song Yin Shu.

Caltrans QA Inspector observed welding being performed at u-rib #U70, U102 and U71. The welding amperage, voltage and gas flow were recorded and verified for future reference. Caltrans QA Inspector observed that some of the gas regulators were not mounted in the proper position for an accurate gas flow measurement.

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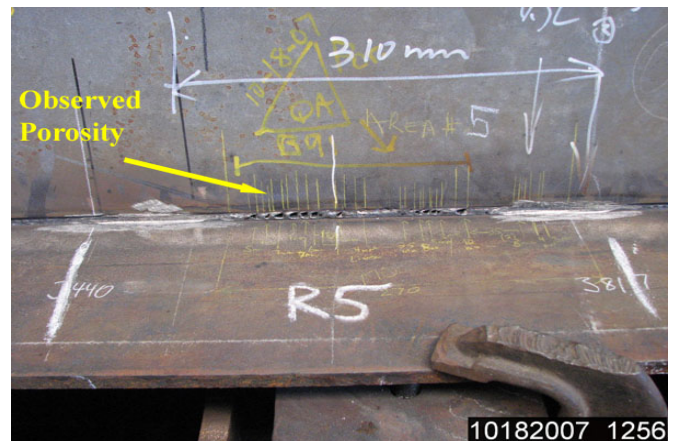
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The gas flow at each welding head is controlled by a regulator. The regulator has a clear glass vane mounted on the side which is marked with graduation marks, indicating the gas flow pressure during welding by the use of a small ball on the inside of the glass vane. This type gage is typically referred to as a sight ball gage and is required to be mounted in the vertical position for accurate visual measurements.

The root passes were then visually inspected for conformance. U-rib #U71, weld 10 appeared to have porosity, starting at the hand-hole end and ending at the 5764 mm mark on the u-rib. Five locations were identified and length measured as follows.

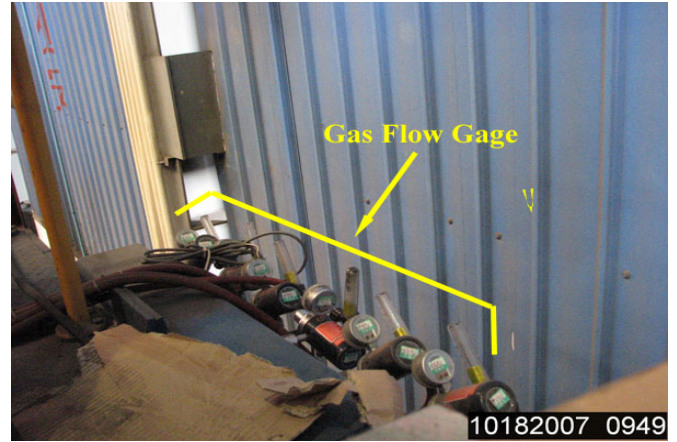
U-Rib #71 Weld 10	Porosity	Location	Length
R1	X	170-253mm mark	83mm
R2	X	1038-1395mm mark	357mm
R3	X	1640-1720mm mark	80mm
Stop/Restart		1947mm mark	
R4	X	2235-2320mm mark	85mm
R5	X	3440-3817mm mark	377mm

These locations were marked by ZPMC for further evaluation. Following digital pictures illustrate welding activities and observed porosity.



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Summary of Conversations:

As identified within the contents of this report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Hasler, Mike	Quality Assurance Inspector
Reviewed By:	Cuellar, Robert	QA Reviewer
